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Statistics Reports: Using the Percent Functions



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Statistics Reports: Using the Percent Functions

Overview

This course will introduce common statistical functions used within the DI Report Writer to report percentages.

Objectives

The user will be able to:

1. Describe how each of the Statistic Report options for PERCENT operates.
2. Create a statistic report which requires use of the PERCENT functions to respond to a data request.

Prerequisites

The attendee should be familiar with how to:

- Analyze a data request (attendance in the Report Writer Concepts course will provide this)
- Create a single criteria query
- Create a statistics report



Definitions

Several percent operators are available in the DI Report Writer. This section describes the purpose for each as well as:

- The mathematical statistics operator name
- The DI Report Writer abbreviation in parentheses
- A definition of the statistic
- A sample screen shot of the statistic in use

Percent Subset in Query (PCS)

PCS gives the percentage of patients meeting a query specification selected in Subset out of all the records included in the report. The query in Subset represents the numerator and all records included in the report represents numerator

This request will return the % of patients who survived out of all patients. Survivors/All * 100

Stat	Data Element	Subset	Label
PCS		DIS_STATUS_ALIVE	% Survivors

Percent Subset in Subset (PSS)

PSS gives the percentage of patients meeting a query specified in Data Element out the patients meeting a query specified in Subset. The Query in Data Element represents the numerator and the Query in Subset represents the denominator

This request will return the % of patient who died out of the blunt injured patients. Died/Blunt * 100

Stat	Data Element	Subset	Label
PSS	DIS_STATUS_DEAD	INJ_TYPE_BLUNT	% Deaths for Blunt Injuries

Percent Valued (PCV)

PCV gives the percentage of patients in which the selected Data Element contains a value other than Blank, Inappropriate, Unknown or Not Valued.

Stat	Data Element	Subset	Label
PCV	INJ_TYPE		% with Valued Injury Type

Percent Not Valued (PCN)

PCN gives the percentage of patients in which the selected data element is either blank, Inappropriate, Unknown or Not Valued.

Stat	Data Element	Subset	Label
PCN	INJ_TYPE		% with Not Valued Injury Type



Examples for Pneumonia/Non-Pneumonia

Using Count and Percent

As a part of the process to determine if ventilated assisted pneumonia cases are on the rise, it is important to prepare reports that will provide the data to establish a baseline as well as to be used for on-going trending reports.

For this example the following statistics will be calculated:

- Count of Pneumonia
- Count of Non-Pneumonia
- Count of All Patients
- Percent of Pneumonia out of all patients
- Percent of Non-Pneumonia out of all patients

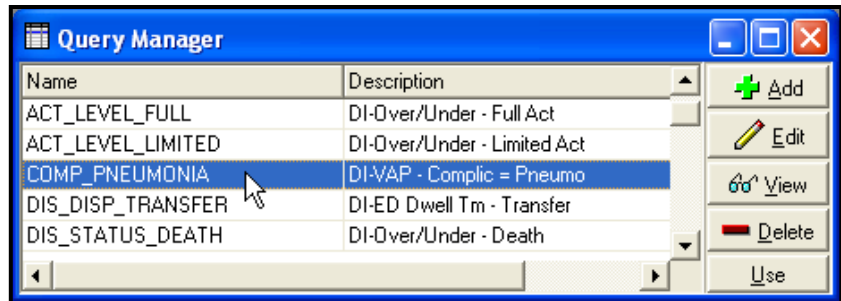
When looking for counts and percent of specific groupings, queries are needed to identify each group in the statistics report.

1. Open the Query Manager and verify what queries are already defined and what needs to be created

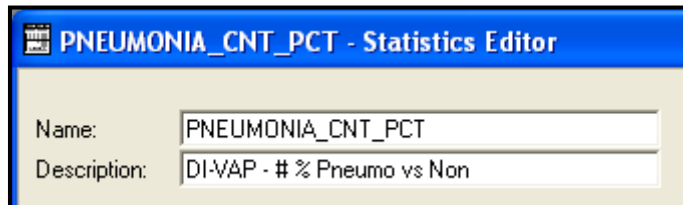
Already Created: *Pneumonia*

Still Needed: *Non-Pneumonia*

Note: Non-Pneumonia is not created but this group can be captured through a unique usage of the Pneumonia query because Non-Pneumonia is the opposite of Pneumonia.

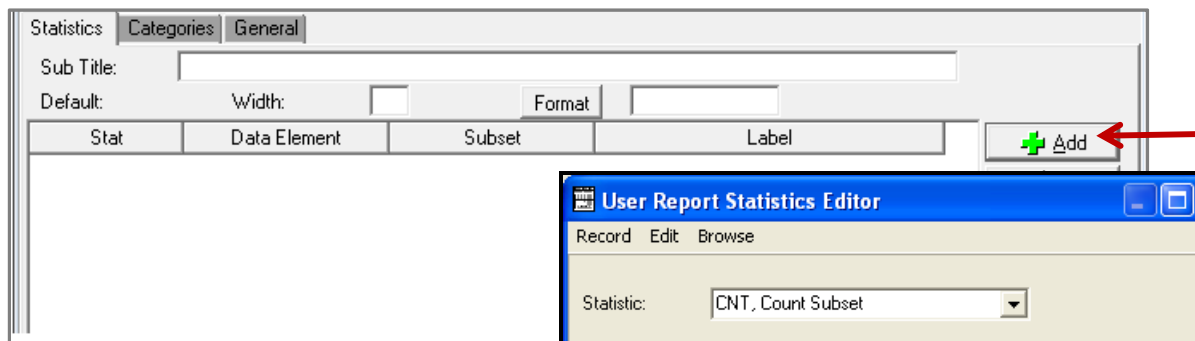


2. Add a Statistics Report
3. Enter a Name and Description

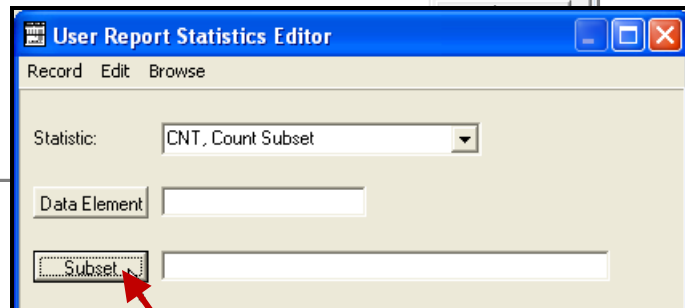


The first line of the report will include a single query for which a count of matching patients can be returned.

1. Add a Statistic and select the Statistic CNT (Count Subset).



2. Select Subset.





3. Select <Queries> tab and select COMP_PNEUMONIA. Note, if no subset (query) is entered, the count will include all records.

The screenshot shows two overlapping dialog boxes. The top one is 'Query Fields' with a 'General' tab. It has a section for 'Select records that match' with radio buttons for 'Each' (selected) and 'One or more'. Below is a table with columns 'Column 1', 'Operator', and 'Column 2'. To the right are 'Add' and 'Edit' buttons. The bottom dialog is 'Data Elements' with tabs for 'Data Elements', 'Queries', 'Coded Variables', and 'Custom Elements'. It contains a table with 'Name' and 'Description' columns. The row 'COMP_PNEUMONIA' with description 'DI-VAP - Complic = Pneumo' is highlighted. A red arrow points to the 'Add' button in the top dialog, and another red arrow points to the highlighted row in the bottom dialog.

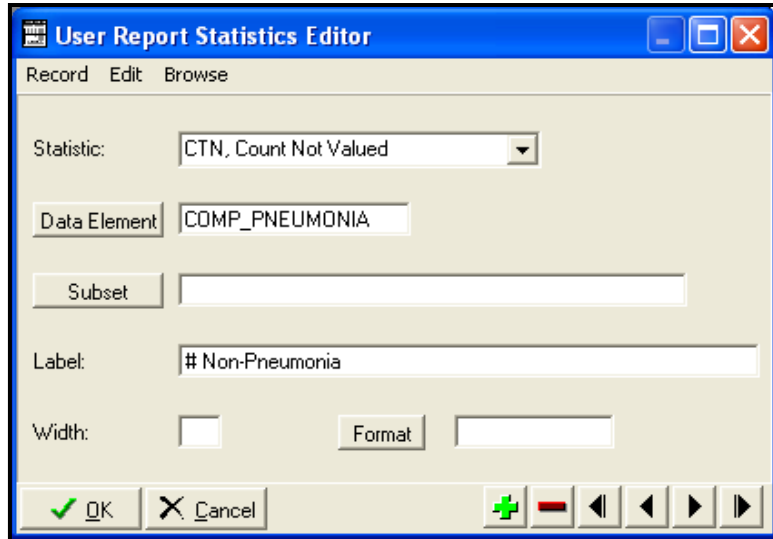
4. Enter a Label and select <+> to add another statistics line.

The screenshot shows the 'User Report Statistics Editor' dialog. It has a menu bar with 'Record', 'Edit', and 'Browse'. The 'Statistic' dropdown is set to 'CNT, Count Subset'. The 'Data Element' field is empty. The 'Subset' field contains 'COMP_PNEUMONIA'. The 'Label' field contains '# Pneumonia'. There are 'Width' and 'Format' fields at the bottom. At the bottom right, there are navigation buttons: a green plus sign, a red minus sign, and left and right arrows. At the bottom left are 'OK' and 'Cancel' buttons.

5. Select the CTN, Count Not Valued statistic. (Capturing the opposite group of a query an alternate use for CTN.)

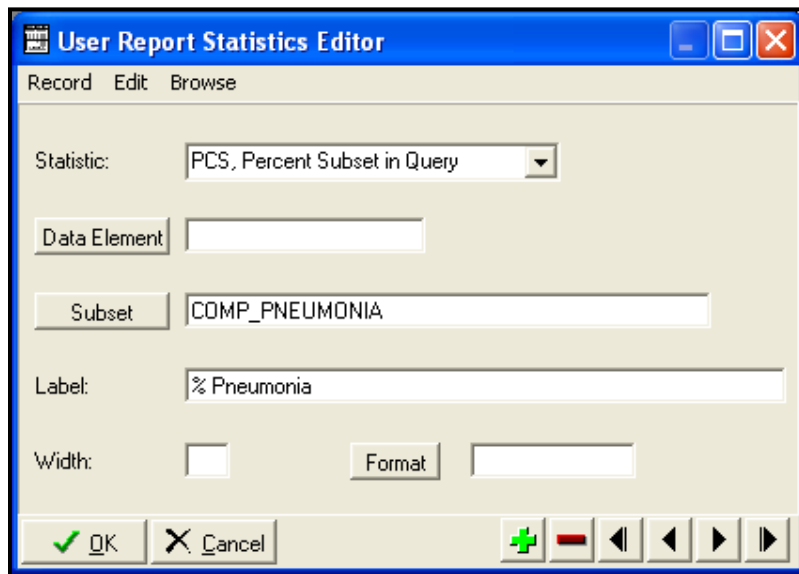
The screenshot shows the 'User Report Statistics Editor' dialog with the 'Statistic' dropdown menu open. The menu lists several options: 'AVG, Average', 'STD, Standard Deviation', 'MIN, Minimum', 'MAX, Maximum', 'SUM, Sum', 'SSQ, Sum of Squares', 'CNT, Count Subset', 'CTV, Count Valued', 'CTN, Count Not Valued' (which is highlighted by the mouse), and 'CTU, Count Unknown'. The other fields in the dialog are the same as in the previous screenshot.

6. Select the Data Element button and select COMP_PNEUMONIA (when using CTN to capture the opposite of a query, that query needs to be specified in Data Element)



7. Enter a Label and select <+> to add a third statistic.

8. Select PCS, Percent Subset in Query.(PCS should be used when the percent of a query over everyone is needed.)

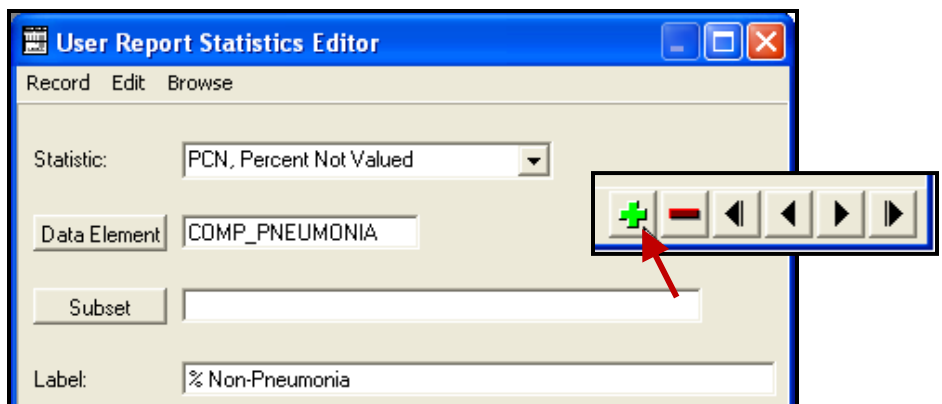


9. Select <Subset>
10. Select <Queries> tab and select COMP_PNEUMONIA
11. Enter a Label and select <+> to add another statistic.

12. Select PCN, Percent Not Valued (an alternate use for PCN is to capture the % of patients in the group opposite a query)

13. Select Data Element and select COMP_PNEUMONIA (When using PCN to capture the opposite of a query, that query needs to be specified in Data Element.)

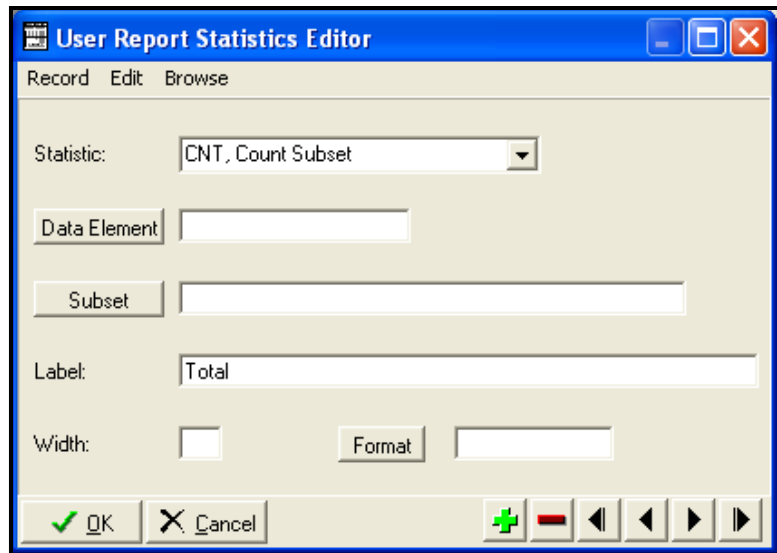
14. Enter a Label and select <+> to add the last statistic.



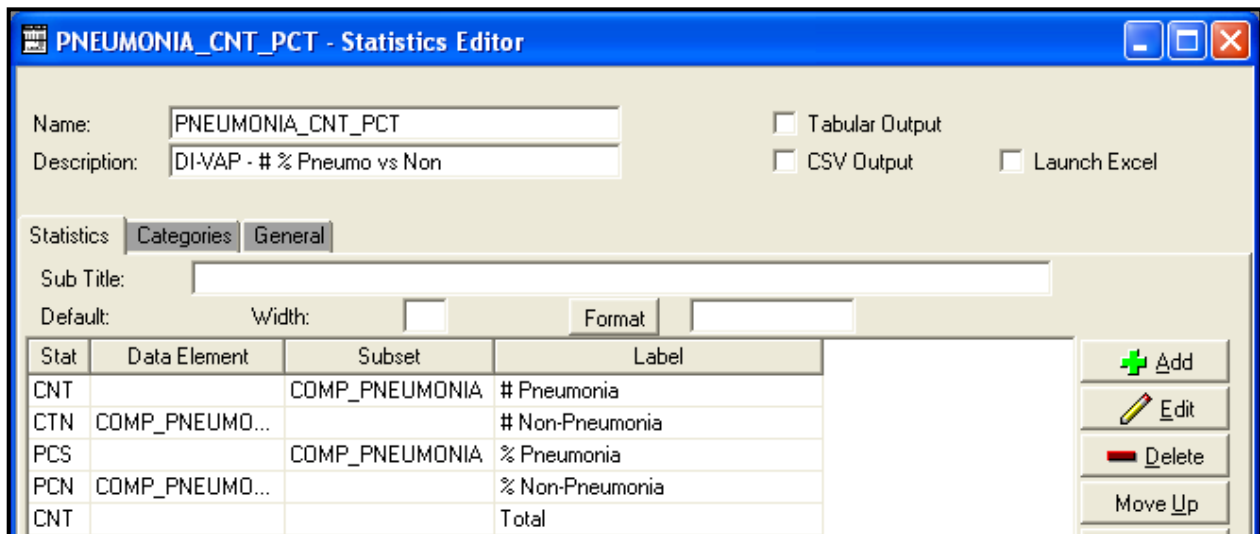


- 15. Select CNT, Count Subset with no Subset to get a Total of all patient

- 16. Enter a Label and select OK



The final report description will appear as follows:



- 17. Save, and then run the report. Notice that none of the format boxes are marked. When send to the RW screen, the output will appear as:

```

DI Report Writer Statistics Report
Generated 09/23/2013
Arrival Dates 01/01/2011 - 12/31/2012
Query EVERYONE
Number of Records 858

Statistics Report

```

	Statistics
# Pneumonia	23
# Non-Pneumonia	835
% Pneumonia	2.7
% Non-Pneumonia	97.3
Total	858



The same report, edited to request tabular format and to be sent CSV, returns the following:

DI Report Writer Statistics Report				
Generated 09/23/2013				
Arrival Dates 01/01/2011 - 12/31/2012				
Query EVERYONE				
Number of Records 858				
# Pneumonia	# Non-Pneumonia	% Pneumonia	% Non-Pneumonia	Total
23	835	2.681	97.319	858

Use Count and Percent with a Gather for Comparison

Vent Days Ranges Gather

It would be nice to see the Pneumonia/Non-Pneumonia count and percent calculations for each of the Vent Day ranges – 1,2-3,4-6,7-10,>10. This sections demonstrates how to structure the report and then how to send it to Excel.

When multiple ranges are desired for statistical comparison, a coded variable should be defined to specify all the ranges. The coded variable used in this example was made in the coded variable concepts class. (Instructions are provided in that document.)

The Coded Variable can be used in a gather to group records according to the ranges specified.

Name	Description	Type
ED_DISPO	DI-ED Dwell Tm - ED Dispo	Spec
INJ_COUNTY_CITY	DI-Over/Under -County/City	Spec
INJ_TYPE_MECH	DI-ED Dwell Tm-Inj Type/Mec	Spec
ISS_OVER_UND	DI-Over/Under - <=15,>15	Spec
VENT_DAY_RNG	DI-VAP - 1,2-3,4-6,7-10,>10	Spec

Column 1	Operator	Column 2	Text
VENT_DAYS	=	1	1day
VENT_DAYS	BETWEEN	2,3	2-3days
VENT_DAYS	BETWEEN	4,6	4-6days
VENT_DAYS	BETWEEN	7,10	7-10days
VENT_DAYS	>	10	>10days

1. Open PNEUMONIA_CNT_PCT in the Statistics Editor.
2. Check Tabular Output. Tabular Output is typically desired when using a Stat report with a gather for comparison. Also, Tabular Output is necessary when sending a Stat report with a gather to Excel.

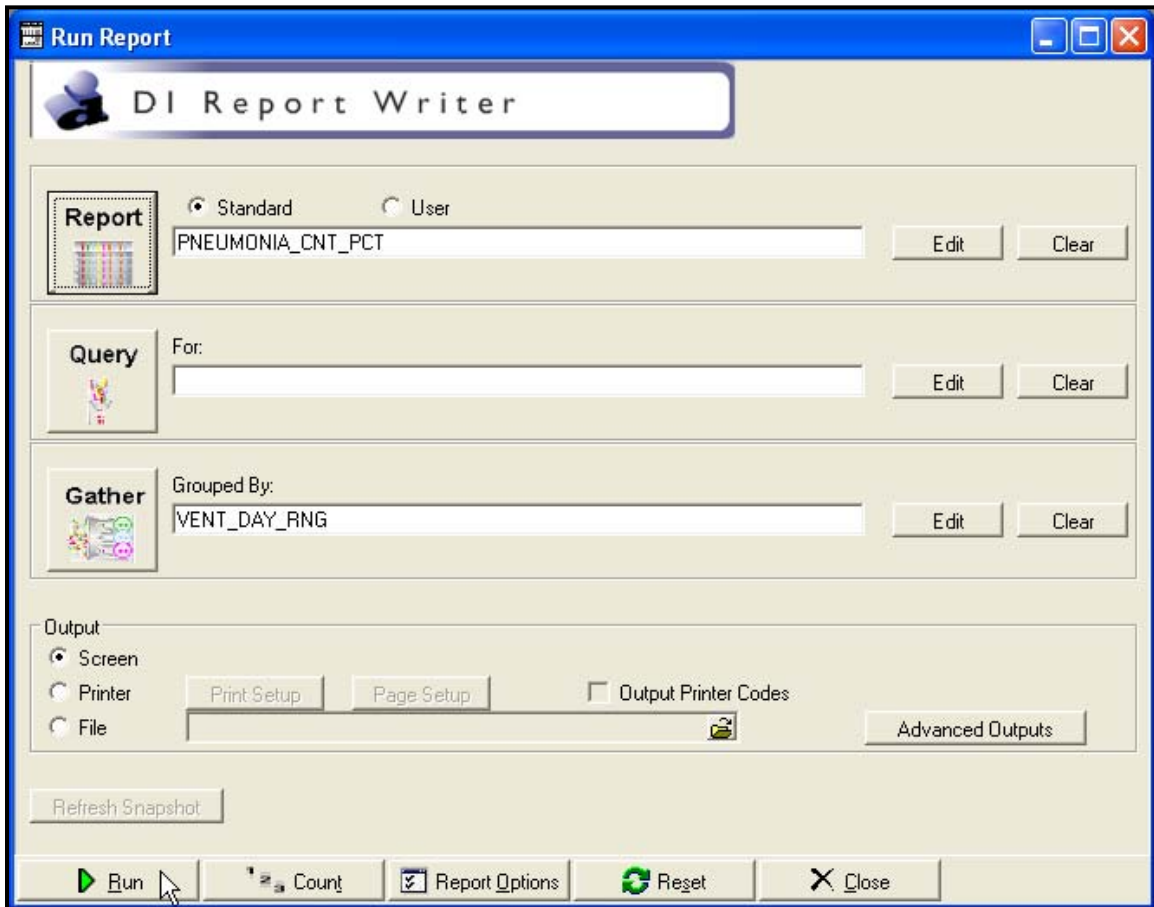
Name:	PNEUMONIA_CNT_PCT	<input checked="" type="checkbox"/> Tabular Output
Description:	DI-VAP - # % Pnemo vs Non	<input type="checkbox"/> CSV Output <input type="checkbox"/> Launch Excel



3. Check CSV and Launch Excel. (Both are needed if sending the results of the statistics report to Excel is desired.)



4. Select <Use> on the Statistics Editor window.
5. Select <Gather> and select VENT_DAYS_RNG gather.
6. Select <Run> (Leave the Output on the default, Screen, when Excel output is specified.)





7. Review the output.

```

DI Report Writer Statistics Report
Generated 09/23/2013
Arrival Dates 01/01/2011 - 12/31/2012
Query EVERYONE
Gather UENT_DAY_RNG <DI-UAP - 1,2-3,4-6,7-10,>10)
Number of Records 38

Vent Days: 1day

Statistics Report

Statistics
-----
# Pneumonia                2
# Non-Pneumonia            36
% Pneumonia                 5.3
% Non-Pneumonia            94.7
Total                       38

DI Report Writer Statistics Report
Generated 09/23/2013
Arrival Dates 01/01/2011 - 12/31/2012
Query EVERYONE
Gather UENT_DAY_RNG <DI-UAP - 1,2-3,4-6,7-10,>10)
Number of Records 15

Vent Days: 2-3days

Statistics Report

Statistics
-----
# Pneumonia                3
# Non-Pneumonia            12
% Pneumonia                20.0
% Non-Pneumonia            80.0
Total                       15

DI Report Writer Statistics Report
Generated 09/23/2013
Arrival Dates 01/01/2011 - 12/31/2012
Query EVERYONE
Gather UENT_DAY_RNG <DI-UAP - 1,2-3,4-6,7-10,>10)
Number of Records 8

Vent Days: 4-6days

Statistics Report

Statistics
-----
# Pneumonia                0
# Non-Pneumonia            8
% Pneumonia                 0.0
% Non-Pneumonia            100.0
Total                       8
    
```



Examples for ED LOS

Count/Percent of Patients with an Extended ED LOS by Shift

This example demonstrates an examination of ED dwell time by shift. The goal is to find out the % of the patients with an ED LOS >1 hour and also those with an ED LOS >3 hours who arrived during the 7a-7p shift vs. the 7p-7a shift.

The queries ED LOS >1 hour and ED LOS >3 hours will each function as a denominator in the report. Note that the patients with an ED LOS >3 hours will also be included in the statistics associated with >1 hour (this is often referred to as not mutually exclusive groupings). Because there is a potential for overlap between the groups, a gather cannot be used.

Categories can be used to specify multiple denominators that are not mutually exclusive.

Build the Queries for the Statistics Report

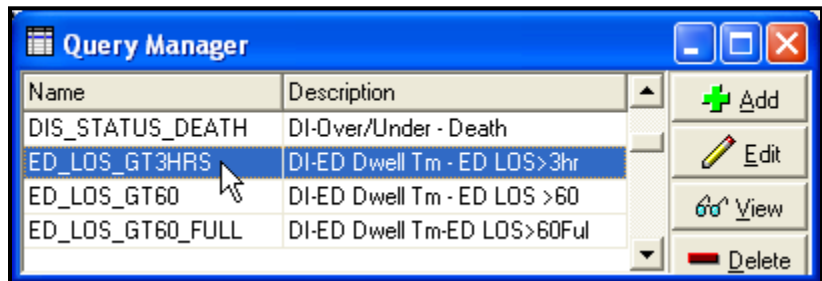
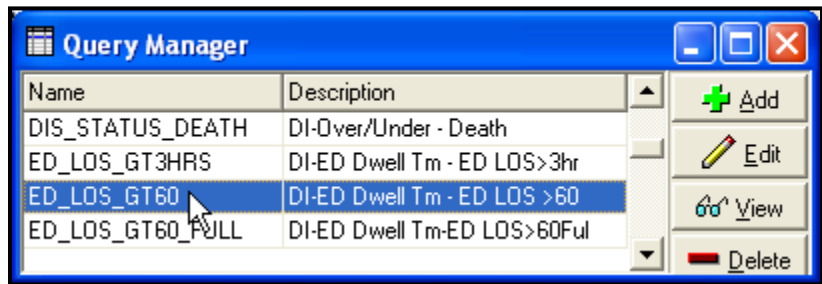
Queries are needed to identify each group in the statistics report. Open the Query Manager and verify what queries are already defined and what needs to be created

Already Created:

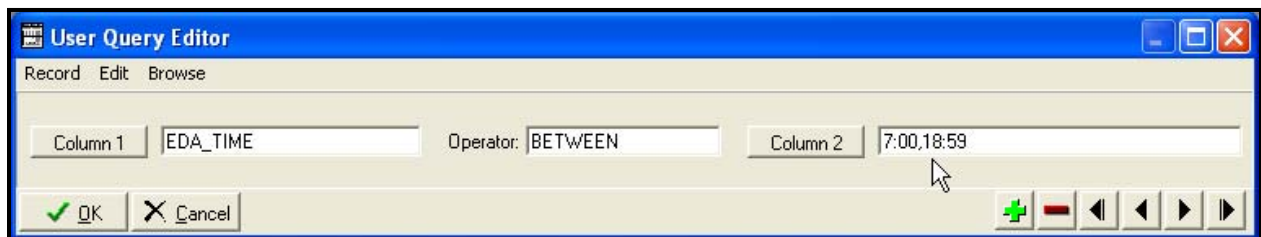
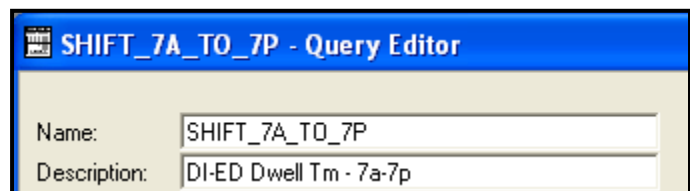
- ED LOS > 1hr
- ED LOS >3hrs

Still Needed

- Shift 7a-7p
- Shift 7p-7a

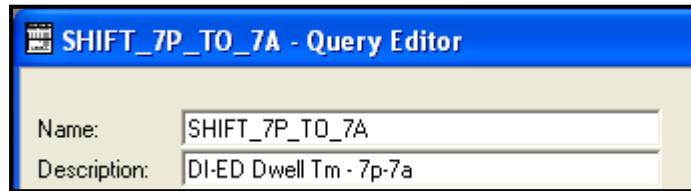


1. Add a new Query and enter a Name and Description. (Start with a shift that doesn't include midnight.)
2. Add the Criteria to define the query. (Column 2 shows the time range using the format of low time, comma, high time)



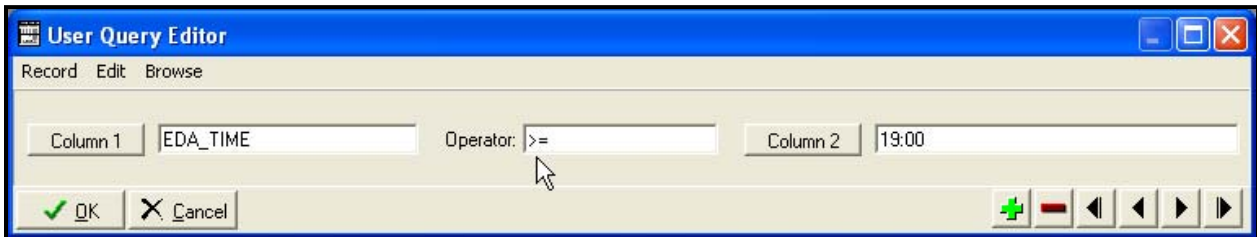


3. Add a Query for the Shift that includes midnight and enter a Name and Description.
(Midnight changes the way this query must be made.)

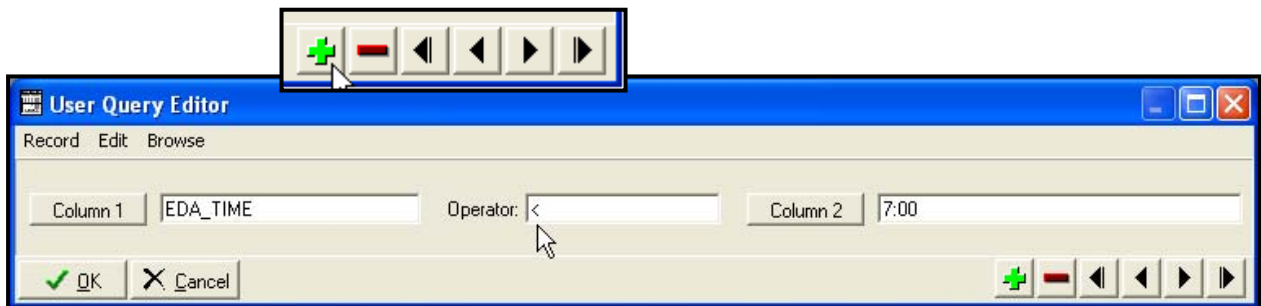


4. For the 19:00-7:00 shift, the BETWEEN Operator will not work because 19:00 is not a low and 0700 is not a high in this range. Using a query, the shift also can be described as greater than or equal to 19:00 or less than 7:00.

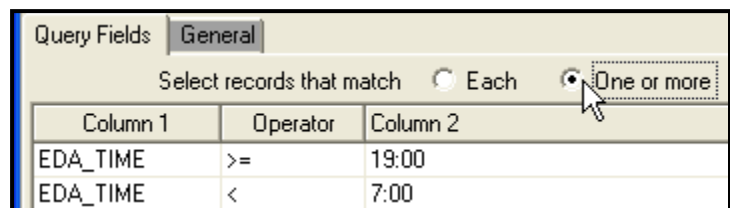
5. Enter the first line of the query: EDA_TIME >= 19:00.



6. Select <+> and enter the second line of the query – EDA_TIME < 7:00.

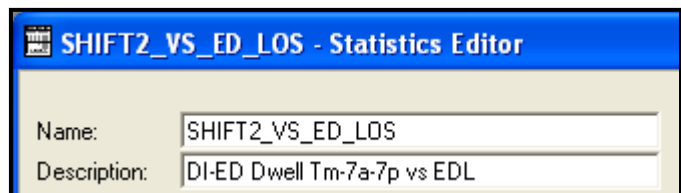


7. Select the One or more radio button.
8. Save the query.



Building the Statistics Report

1. Add a Statistics report.
2. Enter a Name and Description.





- Specify lines for a Count of each of the 2 shift queries and a total line.

User Report Statistics Editor
Record Edit Browse

Statistic: CNT, Count Subset

Data Element

Subset SHIFT_7A_TO_7P

Label: # 7a-7p

User Report Statistics Editor
Record Edit Browse

Statistic: CNT, Count Subset

Data Element

Subset SHIFT_7P_TO_7A

Label: # 7p-7a

User Report Statistics Editor
Record Edit Browse

Statistic: CNT, Count Subset

Data Element

Subset

Label: # Total

- Select <+>.
- Select PCV, Percent Valued

User Report Statistics Editor
Record Edit Browse

Statistic: [dropdown menu]

Data Element

Subset

Label:

CTV, Count Valued
CTN, Count Not Valued
CTU, Count Unknown
CTI, Count Inappropriate
PCS, Percent Subset in Query
PSS, Percent Subset in Subset
PCV, Percent Valued
PCN, Percent Not Valued
PCU, Percent Unknown
PCI, Percent Inappropriate

- The numerator of the calculation will be the query entered in <Data Element>. Select the first shift query.
- Enter a Label and select<+>. (A Subset could be used as a denominator, but the Categories tool will give an opportunity to specify multiple denominators for this numerator specification and display it well for comparison.)

User Report Statistics Editor
Record Edit Browse

Statistic: PCV, Percent Valued

Data Element SHIFT_7A_TO_7P

Subset

Label: % 7a-7p

- Specify a line for the second shift

User Report Statistics Editor
Record Edit Browse

Statistic: PCV, Percent Valued

Data Element SHIFT_7P_TO_7A

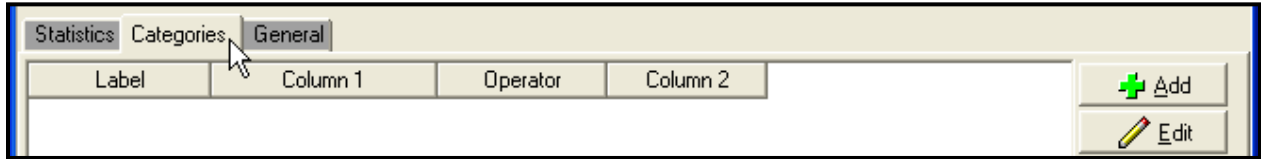
Subset

Label: % 7p-7a

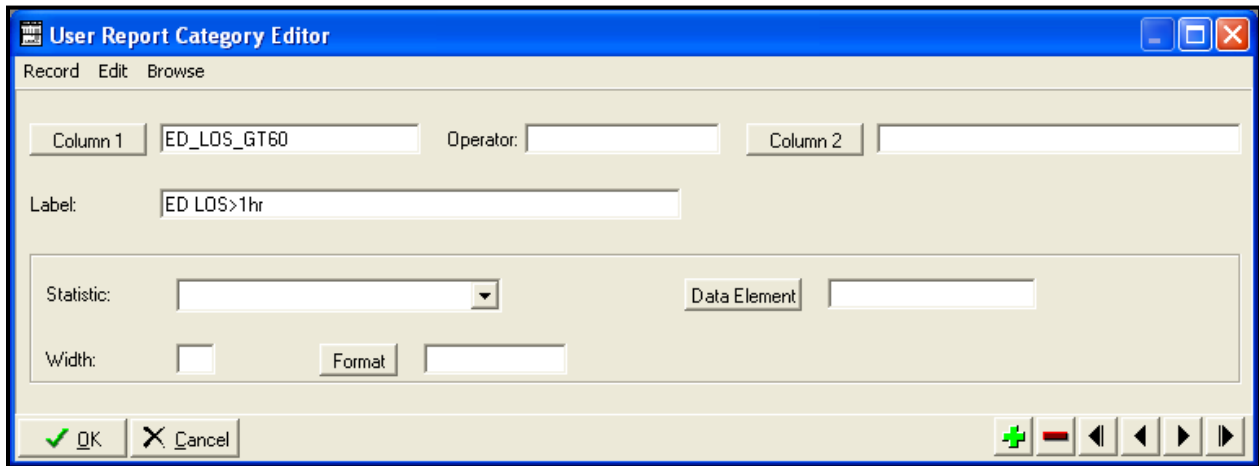


Add Categories to the Report

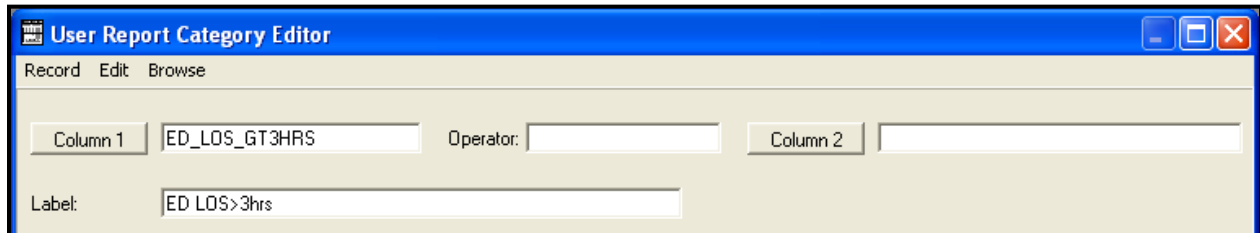
9. Select the Categories tab.
10. Select <Add>. (Quick Add cannot be used for Categories using 2 non-exclusive groups. Each query will need to be identified individually using Add.)



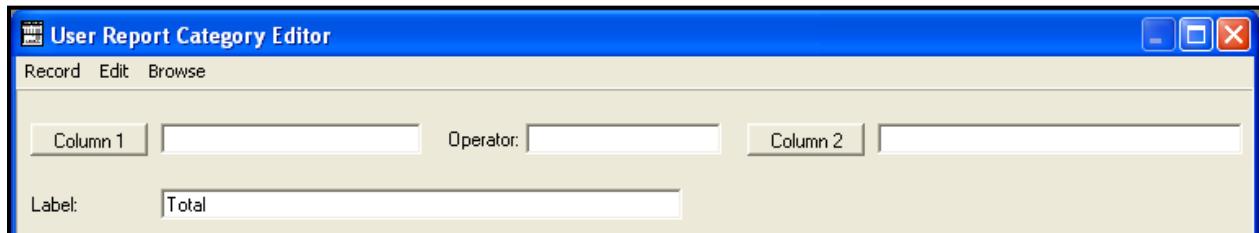
11. Use <Column 1> to specify the first query needed as a denominator: ED LOS > 1hr.



12. Enter a Label. (Operator and Column 2 should be blank when a query is used in Column 1.)
13. Select <+>.
14. Specify the second query needed as a denominator: ED LOS >3hrs.



Select <+> and specify a total Category. (A Total Category should have no query specifications, similar to a Total line under the Statistics tab.)





15. Select <OK>.

Label	Column 1	Operator	Column 2
ED LOS>1hr	ED_LOS_GT60		
ED LOS>3hrs	ED_LOS_GT3HRS		
Total			

16. Check Tabular Output (The default output for a Statistics report with Categories is to have the Statistics going down and the Categories going across. Tabular Output will reverse this. When defining a Statistics report with multiple denominators, the Categories going down the page make more sense.)

SHIF2_VS_ED_LOS - Statistics Editor

Name: SHIF2_VS_ED_LOS
 Description: DI-ED Dwell Tm-7a-7p vs EDL

Tabular Output
 CSV Output
 Launch Excel

Sub Title: _____
 Default: _____ Width: _____ Format: _____

Stat	Data Element	Subset	Label
CNT		SHIFT_7A_TO_7P	# 7a-7p
CNT		SHIFT_7P_TO_7A	# 7p-7a
CNT			# Total
PCV	SHIFT_7A_TO_7P		% 7a-7p
PCV	SHIFT_7P_TO_7A		% 7p-7a

Statistics Report

DI Report Writer Statistics Report
 Generated 09/23/2013
 Arrival Dates 01/01/2011 - 12/31/2012
 Query EVERYONE
 Number of Records 858

	# 7a-7p	# 7p-7a	# Total	% 7a-7p	% 7p-7a
ED LOS>1hr	305	292	597	51.089	48.911
ED LOS>3hrs	200	163	363	55.096	44.904
Total	400	389	858	46.620	45.338

17. Click Save, Use and Run to review the output.



Exercises

Instructions: For each of the following 5 exercises, read the scenario and determine which additional statistics would be useful in analyzing the data.

Scenario 1:

1. Average Age for:
 - a. All Patients
 - b. Blunt Injuries
 - c. Penetrating Injuries
 - d. Blunt Injuries that Did Not Survive
 - e. Penetrating Injuries that Did Not Survive

Scenario 2:

1. Percentage of Patients with:
 - a. Blunt Injuries
 - b. Penetrating Injuries
 - c. Age <15
2. Percentage of Patients with an Age <15 and had:
 - a. Blunt Injuries
 - b. Penetrating Injuries
3. Percentage of Patients with Blunt Injury and Age <15
4. Percentage of Patients with Penetrating Injury and Age <15

Scenario 3:

1. Average ISS for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard

Scenario 4:

1. Percentage of Patients with:
 - a. Patients with ETOH onboard
 - b. Patients with no ETOH onboard
 - c. Patients with unknown ETOH onboard
 - d. Patients with Blunt Injuries
 - e. Patients with Penetrating Injuries
2. Percentage of Patients with ETOH onboard and had:
 - a. Blunt Injuries
 - b. Penetrating Injuries
3. Percentage of Patients with No ETOH onboard and had:
 - a. Blunt Injuries
 - b. Penetrating Injuries
4. Percentage of Patients with Unknown ETOH onboard and had:
 - a. Blunt Injuries
 - b. Penetrating Injuries

*Scenario 5:*

5. Average Hospital LOS For:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard

Answers to Exercises*Scenario 1 Answer*

1. Minimum, Maximum, Standard Deviation of Age for:
 - a. All Patients
 - b. Blunt Injuries
 - c. Penetrating Injuries
 - d. Blunt Injuries that Did Not Survive
 - e. Penetrating Injuries that Did Not Survive
2. Count of Patients with a valued age:
 - a. All Patients
 - b. Blunt Injuries
 - c. Penetrating Injuries
 - d. Blunt Injuries that Did Not Survive
 - e. Penetrating Injuries that Did Not Survive
3. Count of Patients with a non valued age:
 - a. All Patients
 - b. Blunt Injuries
 - c. Penetrating Injuries
 - d. Blunt Injuries that Did Not Survive
 - e. Penetrating Injuries that Did Not Survive

Scenario 2 Answer

1. Count of Records for:
 - a. All Patients
 - b. Blunt Injuries
 - c. Penetrating Injuries
 - d. Age <15
 - e. Age <15 Blunt Injuries
 - f. Age <15 Penetrating Injuries



Scenario 3 Answer

1. Minimum, Maximum, Standard Deviation of ISS For:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard
2. Count of Patients with a valued ISS for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard
3. Count of Patients with a non valued ISS for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard

Scenario 4 Answer

1. Count of Records for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with no ETOH onboard
 - d. Patients with unknown ETOH onboard
 - e. Patients with Blunt Injuries
 - f. Patients with Penetrating Injuries
 - g. Patients with Blunt Injuries and ETOH onboard
 - h. Patients with Penetrating Injuries and ETOH onboard
 - i. Patients with Blunt Injuries and No ETOH onboard
 - j. Patients with Penetrating Injuries and No ETOH onboard
 - k. Patients with Blunt Injuries and Unknown ETOH onboard
 - l. Patients with Penetrating Injuries and Unknown ETOH onboard

Scenario 5 Answer

1. Minimum, Maximum, Standard Deviation of Hospital LOS for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard
2. Count of patients with a valued Hospital LOS for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard
3. Count of patients with a non valued Hospital LOS for:
 - a. All Patients
 - b. Patients with ETOH onboard
 - c. Patients with No ETOH onboard
 - d. Patients with Unknown ETOH onboard